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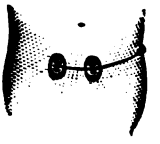

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Being a series of three lectures delivered to the students of the Class in Pharmacology and Therapeutics, University of Bishop's College, Faculty of Medicine, Montreal, March, 1908.

LECTURE III.

THE STATIC MACHINE.

To-day, gentlemen, it is my intention of talking with you on the subject of Static Electricity.

You are no doubt perfectly familiar with the three forms of electricity: 1, magnetism; 2, statical, frictional or electricity at rest; 3, galvanic, dynamic or electricity in motion.

The second form or the statical electricity, which is sometimes called the Franklinic electricity, is a form in which two fluids are assumed, which are separated by mechanical friction, but which, when at rest, exist in a state of union as a neutral fluid, imponderable, subtle, pervading according to Franklin and Symme all *matter*, but which when separated by friction takes the forms of *positive* or vitrious or electricity on glass, and *negative* or resinous or electricity on silk.

The usual method of generating static electricity is the friction of some insulating or non conductive material. We might obtain as much electricity from the friction of any conductive substance, but here conduction would disperse the electricity as soon as formed.

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We are far off from Von Guericke, of Magdeburg, who, in 1647, generated static electricity by rotating a ball of sulphur between his hands.

The first induction machine had only one single glass plate, whilst the Holtz and the Wimhurst's machines have each two glass plates or disks. The *Holtz* machine has two plates of different sizes, a large, posterior stationery one, and a small, anterior, rotatable plate with two electrophori or armatures made of thin cardboard painted with shellac and pasted over the edges of two small windows cut in the plate at the opposite end of any diameter.

In the *Wimshurst* machine the two circular glass plates are mounted on a horizontal spindle, about ¼ of an inch apart, and in such a way as to rotate in opposite direction. On the outer surface of the plates are pasted radial strips of tin-foil. Now as to the method of operating both machines—the Holtz machine has to be primed by touching one *electrophore* with a piece of hard rubber frictioned with catskin, thus inducing *negative* electricity in one set of combs in contact with it, and *positive* on glass disk or plate, which latter is carried by the rotatory movement of the plate to the other combs, and thus to each set of combs and the knobs connected with them. It gives when strengthened by the condensers or Leyden Jars, a spark of 6 or 7 inches.

In the Voss and the Wimshurst machine, the initial charge is obtained from the electricity of the air and are therefore self-exciting, and not materially influenced by the state of the atmosphere. A machine with 12 plates of 30 inches in diameter produces sparks 13½ inches long. As we shall have to go more deeply into the construction of modern induction plate machines, or as we sometimes call them static machines, we will not tire you with needless descriptions of these two machines, but would refer any desirous of familiarizing himself with their construction, to Ganot's admirable work.

Statics is that branch of dynamics, which investigates the relation existing between forces in equilibrium or

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state of rest, so that we mean by a static machine one capable of generating a frictional electricity or electricity at rest. (Franklinic). These machines as they are now made do not materially differ from one another, but even greatly resemble each other in general appearance.

They usually consist of an oak case more or less solidly put together, supposed to be air-tight, fitted with glass panels front and back, and 2 removable glass doors or panels, usually lined with felt or rubber at points of contact, and closing both ends of the case which usually measures 4 feet in height and in breadth and about 2 feet in depth. This is usually supported on a four-legged table of same size, which may or may not contain drawers for storing any accessories of the machine. On an axle fixed horizontally in the case the disks are placed, and it is in the nature and the arrangement of the plates, that the machines mostly differ. The diameter of the plates or disks is usually 28 to 30 inches, other sizes being exceptional. The material used is usually glass, the common and the coarser the better, although for the sake of appearance a polished and accurately turned true-running plate would be more eligible. Some use mica plates instead of glass, and in this case, the plates need not be of so large a diameter, because a much greater speed can be used, and the ampère-volts of the current generated is partly dependent on speed. Glass plates on account of their fragility need to be treated with greater care. Any non-conductive material may be used in the construction of plates or disks, and I believe, asbestos, papier-mache, the so-called red-fibre, etc., will be used at some future date for plate-making. Mica plates are made by pasting and shellacing thin pieces of mica together and compressing them in moulds of the exact size of the plate desired; most of the glass plates used in this country are imported from Belgium, but any glass-cutting establishment can make plates, even in the good city of Montreal, at Pilkington Bros., only you have to pay a great deal for the plates, and which would be liable to wobble.

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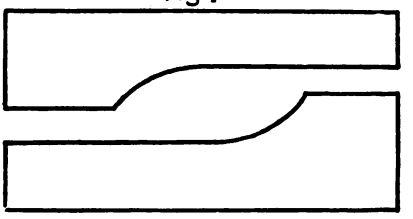
In the general arrangement of the plates of a static machine, one set of plates are stationary, and the other rotatable. The comparison of the ampère-voltage of static machines is made by comparison of the number of plates, but even here there is no uniform standard, for certain makers, "Waite & Bartlett, New York," only take account of the revolving plates, *i. e.*, disks, because the stationary are not disks at all or plates in the common acceptation of the term, whilst others number all the plates whether stationary or revolving. For therapeutic purposes a machine with 8 revolving plates is amply sufficient unless it be in very exceptional cases. For either fluoroscopic or skiagraphic work involving deeper structures of the abdomen or pelvis, 10 to 18 revolving plates may be necessary.

The stationary plates are perforated by a circular aperture much larger than those in the revolving plates, and are suspended on some gutta-percha or hard rubber devices, thus insuring perfect insulation from the other set of plates. In the Wait & Bartlett machine, which has been pushed for all, and, perhaps, more that it is worth, the stationary plates are only half as numerous as the revolving, and instead of being circular, are made up of two irregularly oblong glass plate sections.

Fig 1



The evident purpose of this has been to obviate the vexatious glass boring in circular plates and to facilitate the liberation of the spindle to which are attached the revolving plates; as a matter of fact there is no reason in the world why plates of this type could not generate as much electricity as plates of the circular type, provided the surfaces of

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the latter be of a like extent to that of the latter and the oblong type of plates be in proper apposition with their circular mates. You have been told that in the Wait & Bartlett machine the stationary plates were only half as numerous as the revolving ones, hence on that very score the plates are not properly mated.

The space between the stationary and revolving sets of plates is also a matter to which some attention should be given, for if it be too great there is a loss of electrical fluid + and — by their neutralization, which stands in inverse ration to distance, speed and the dryness of the atmosphere in the case of the machine.

The armatures, which may be of different shapes, but which are usually crescent shaped, are placed in pairs on the opposite ends of any diameter of some of the stationary plates, whilst on the revolving plates, there is nothing except on the two outer ones on which are fastened a variable number of brass buttons on which rub the fine wire brushes which act as an excitant of the machine.

In front of the machine a set of balls usually of brass, about 20 inches apart, and perfectly insulated, have connection with a set of collecting combs placed between the revolving and stationary plates, one set at each end. Two discharging rods with smaller balls are connected with the larger accumulating system of brass balls, and in such a way as to be brought closer to each other or separated as necessary.

Most machines are self-exciting, but others, as the Waite and Bartlett, and the Van Houten and Ten Broeck modification of the Morton Wimshurst & Holtz influence machines, contain one or more diminutive plates to be used as the starter.

Gentlemen, a static machine to work well must have its plates perfectly insulated by a double or a treble coating of perfectly bone-dry shellac, and this must be renewed from time to time, the previous coatings being removed by alcohol, wood spirits, ammonia or by soaking in a water bath; the

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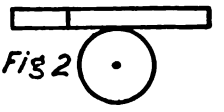
brass parts must be kept clear of oxidations and properly lacquered. The ozone generated in the operation of the machine is to blame for the injury to both and lacquer and shellac.

It is well to have a hygrometer in the case of the machine, so as to keep "posted" as to the condition of the atmosphere, this being especially important from June to September. When the hygrometer marks 40-50 or lower, some means of drying the air in the case must be used, by chopped ice and salt or by CaCl or Ca O_2 (quicklime), baking the Ca Cl, of which 2-3. lbs. should be used, and leave in the box until the hygrometer registers about 25. Crude Ca Cl, owing to evolution of Cl. in presence of O_3, will form a coating over the entire inside of machine and spoil brushes and render it useless. So will CaCl, which is not thoroughly baked.

Gentlemen, a static machine may be actuated by hand, by means of a crank (in more than one sense), but whenever it is possible to use other motive power it is better to do so; some use water motors ($15 to $35) direct current motors $40 to $60 or the alternating current motors, which are the most expensive, ⅓-⅙ h. p. is necessary. The water motors are fairly capable of altered rate of speed, by regulating the supply of water by means of the tap; likewise the speed of the direct current motors can be modified with a rheostat; not so with the alternating current motors; their speed being thus uninfluenced, we have to resort to different speed-wheels, or what we call friction speed regulators.



All these little details, gentlemen, had better be learned in the school of experience, in which most of you shall soon enter, I hope, ere long. A good static machine will give with proper speed a spark of from 12 to 20 inches. The

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plate should revolve in the opposite way to the hands of a clock.

The requisites of a static machine are two or three pairs of different sized Leyden jars, diverse electrodes, a spark regulator, a barium-platino-cyanid fluoroscope, a self-regulating X-ray tube, ozone generator, etc., and an insulating platform, tube holder, etc. It is not possible for me to describe all these apparatus in detail, but as I purpose limiting myself to the therapeutic uses of the X-ray, I shall only say a few words about it.

X-rays: certain, invisible, non-refrangible rays, rays emanating from the surface of an electrically excited vacuum tube opposite the cathode electrode, having power

(1) Of permeating objects impervious to light and heat rays.

(2) Of discharging electrified bodies or surfaces exposed to them.

(3) Of exciting fluorescence in fluorescent salts.

(4) Of affecting sensitized photographic plates in a manner similar to light rays.

(5) Determining certain physiological and at times pathological effects on cutaneous surfaces. The X-rays were discovered by Wm. Conrad Roëntgen, professor of physics at the Royal University of Würzburg in Germany, in the year 1895, and not being certain as to their nature he prefixed these rays by the letter X., which stands for anything unknown. The year 1894 had been marked by the dicoveries of Prof. Paul Lenard, of Bonn, that a Crookes tube could stir up the dormant phosphorescence of certain substances placed behind a screen and outside the tube.

The X-rays possess the property of passing through all bodies in their path, and some bodies being more permeable than others, in proportion to their density casting different depth of shadows.

Wm. Crookes, an English physicist, had made glass tubes containing a high vacuum for showing any of the phenomena of the ultra gaseous state of matter, and these

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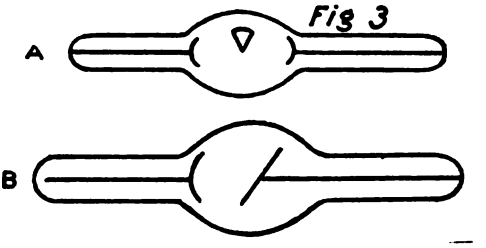
with diverse forms of anodal and cathodal terminals are used forproducing X-rays.

There are two main varieties, the (*a*) double focus tubes with 3 terminals, *anode, cathode* and *anticathode* or target used mostly in alternating current ; (*b*) single focus tubes, anodes and cathode, the former acting also as the targets and used on the direct currents.



The anode and cathode, when the target or anticathode is distinct, are made of aluminium. When the cathode and anticathode are one, platinum disks are used. The position of the target has been the subject of great researches. Crookes & Roentgen, et al., placed the target in the centre of the curvature of the cathode.

Frei had better results by using 3 or 4 times this distance. Rollins showed the real focus of the cathode rays to be between these two extremes, saying that particles of like electricity being repellant to each other would come to a focus beyond the theoretical focus. Some targets are rotary to prevent overheating of any one point and the destruction which does at times occur of the platinum target ; some targets are hollow and are water cooled by a system of rubber connections with a stream of cold water.

The resistance of the tubes is a very important question. If the current passes readily, the tube is said to have

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a low internal resistance or is commonly described as soft ; if, on the other hand, the current passes through with difficulty, we say that the internal resistance is high and that the tube is hard. This internal resistance depends on the state of the vacuum of the tube. This may be determined by what is called the *spark-gap*, *i.e.*, a wire passing from one pole to the other outside the vacuum tube, increasing the gap to the point at which the current no longer passes over it, but within the tube itself. The principle of this is that the electrical current will flow in the direction of least resistance. The internal resistance would be expressed by the number of inches of the gap over which the electrical current would pass to avoid the internal route through the tube which is being tested. The resistance of the tubes to the current may be modified by many devices, by multiple spark-gap, etc., which we have not time to consider this morning, and by specially modified tubes.

I have been using almost exclusively what we call the self-regulating *Mueller tubes*. It consists in the main of a tube or bulb with terminals like an ordinary X-ray tube, but having a smaller tube attached to it by means of connecting tube so that the cavities of both are as one. In the secondary bulb we have two terminals ; one cathodal made of a disc of mica, which, when connected with the cathode of the main tube, lowers the internal resistance or softens the tube. Thus we may regulate the degree of penetration of the X-rays, by manipulating the connecting rod between the two anodes.

The anode of the supernumerary tube is made of an alloy of Iridium. It does not take the form of a disc, but consists of a fine wire coiled around a diminutive glass rod.

When a tube has, from some cause, become too soft, *i. e.*. the internal resistance has become too low, it may be hardened by connecting the anodes in both primary and secondary tubes, whereby the current flowing through the latter causes the evolution of fine metallic particles which

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bind the gases in the tube and thus modifies its internal resistance.

The varieties of self-regulating tubes are growing daily, and from experience those of Truax, Greene & Company, of Chicago, are quite efficient, and of comparatively easy manipulation.

(*Continued*).

Selected Articles.

THE THERAPEUTICS OF BILBERRY.

Many of our most esteemed and most of our oldest drugs are derived from the vegetable kingdom. Although they do not always respond decidedly to the tests of the experimental laboratory, yet the clinical evidence of centuries leaves no reasonable doubt of their power. From time to time also we receive favourable reports concerning plants, which have sometimes been unknown in medicine, have sometimes been formerly employed, but fallen into disuse, and in other instances have enjoyed some popular reputation, but have been little used by educated physicians.

Among such vegetable products is the bilberry, blueberry or whortleberry, the fruit of a shrub well known in Europe and the United States. It is more familiar as a palatable article of food than as possessed of medicinal virtues. Testimony exists, however, as to the properties of this berry. Professor Winternitz, of Vienna, has written of the value of an extract of the *Vaccinium myrtillus* or bilberry, in affections of the throat, bronchi, kidneys, bladder and in diabetes mellitus. It has also been used with asserted good effect in diabetes by Dr. Weil, of Berlin. The berries, or preparations from them, such as decoctions, fruit-wines, etc, have likewise been given in diarrhœa, both by the mouth and by rectal injection. Similarly, a decoction has been used as an injection into the urethra in gonorrhœa.

Our attention has been again drawn to the properties and uses of the bilberry by a paper in the *British Medical*

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Journal from the pen of Dr. Max M. Bernstein.* The author believes that he is justified in saying and able to prove that a remedy capable of meeting all the indications of typhoid in the intestine will be found in the fruit of the bilberry-shrub. Dr. Bernstein has been using bilberry for fourteen years in the capacity of an astringent. He gave the jam of bilberries in combination with tincture of opium in fermentative diarrhœas with flatulences and in cases of cholera nostras. Their promptness as an anti-fermentative was decided. He cites a case in which he employed a concentrated decoction in a severe case of chronic ulceration of the bowels subsequent to acute dysentery. He thinks that he was justified in ascribing the favourable results chiefly to the berries.

About five years ago for the first time he tried a weak infusion in a case of typhoid in a child, and it seemed to him that the disease took a milder course and that convalescence started earlier than he had anticipated. In other cases of the same disease he witnessed improvement from the use of the same remedy.

He was convinced that the favourable action of the drug could not be solely due to its slightly astringent properties, but must be based upon some other quality. According to Hager's analysis, which he quotes, the berries containing "sugar, malic acid, limonic acid, a pigment containing tannin, pectins, etc."

Experiments were undertaken to test the specific effect of the berries upon the typhoid bacillus and other pathogenic bacteria of the intestines. The results showed that the typhoid bacillus was killed by the action of bilberry juice at some point of time exceeding twenty-four hours, but not later than forty eight hours after commencement, while the bacillus coli communis commonly showed less resistence and failed to grow even after twenty-four hours. It was furthermore necessary, however, to eliminate the action of the acids contained in the bilberry before forming a definite opinion. In this second test the typhoid bacillus, Gaertner's bacillus, the cholera vibrio and one variety of the pathogenic species of the bacillus coli communis were filled by the neutralized decoction of bilberry within twenty-four hours. It is reasonable to assume that a stronger prepara-

* "On the Bilberry (*Vaccinium myrtillus*) as a Remedy in Typhoid Fever and other Infectious Diseases of the Intestine." The *British Medical Journal*, Feb. 7, 1903. By Max M. Bernstein, M.B., M.R.C.S., L.R.C.P. Read before the Hunterian Society.

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tion would have a still prompter action and its strength need not be limited, as the berries are not poisonous.

The last fact permits the free administration of frequent and large doses, if desirable, and allows a wide range in its concentration. The infusion or the jam, moreover, has a pleasant taste, can be sweetened to the patient's liking, can be taken hot or cold, and easily mixed with mineral waters, lemon-water, milk, custards, cream, etc. Neither the acid-juice of the stomach nor the alkaline contents of the bowels will interfere with the action of the drug. This action reaches down to the lowest portion of the bowel. Bernstein, therefore, looks upon the bilberry as a suitable means for local treatment within the intestine. *Vaccinium myrtillus* can, consequently, claim to keep the intestine aseptic, as far as the bacillus typhosus is concerned, prevent reabsorption and reinfection, and to have a favourable effect upon the ulcers. It is probable also that the anti-fermentative action of myrtillus will tend to prevent perforation.

The author's excellent opinion of the value of bilberry is confirmed by Fisch. He considers that it would be advisable to make use of the remedy in acute dysentery. He believes, furthermore, that it should be given a serious and extensive trial in true cholera, the vibrio of which it kills, and with due regard to its astringent qualities it should be employed in all diseases of which ulceration of the mucous membrane is the main symptom, in those with an excessive secretion and in all cases of abnormal fermentation.

We cordially join the author's concluding hope that those who have frequently to deal with typhod, acute dysentery and cholera will not fail to avail themselves of this new remedial means and give it a wider clinical application and test than it had been possible for him to do.—*Medicine and Surgery*, March, 1903.

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WILLIAM BEAUMONT; A PIONEER AMERICAN PHYSIOLOGIST.

By William Osler, M.D.,

BALTIMORE.

Professor of Medicine, John Hopkins University,

An Address before the St. Louis Medical Society, October 4, 1902.

Come with me for a few moments on a lovely June day in 1822, to what were then far-off northern wilds, to the Island of Michilimacinac, where the waters of Lake Michigan and Lake Huron unite and where stands Fort Mackinac, rich in the memories of Indian and voyageur, one of the four important posts on the upper lakes in the days when the rose and the fleur-de-lys strove for the mastery of the western world. Here the noble Marquette laboured for his Lord, and here beneath the chapel of St. Ignace they laid his bones to rest. Here the intrepid LaSalle, the brave Tonty and the resolute Du Luh had halted in their wild wanderings. Its pallisades and block-houses had echoed the war-whoops of Ojibwas and Ottawas, of Hurons and Iroquois, and the old fort had been the scene of bloody massacres and hard-fought fights, but at the conclusion of the war of 1812, after two centuries of struggle, peace settled at last on the island. The fort was occupied by United States Troops, who kept the Indians in check and who did general police duty on the frontier, and the place had become a rendezvous for Indians and voyageurs in the employ of the American Fur Company. On this bright spring morning the village presented an animated scene. The annual return tide to the trading post was in full course, and the beach was thronged with canoes and batteaux laden with the pelts of the winter's hunt. Voyageurs and Indians, men, women and children, with here and there a few soldiers, made up a motley crowd. Suddenly from the company's store there is a loud report of a gun, and amid the confusion and excitement the rumour spreads of an accident, and there is a hurrying of messengers to the barracks for a doctor. In a few minutes an alert-looking man in the uniform of a U. S. Army surgeon made his way through the crowd and was at the side of a young French Canadian, who had been wounded by the discharge of

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a gun, and with a composure bred of an exceptional experience of such injuries prepared to make the examination. Though youthful in appearance, surgeon Beaumont had seen much service, and at the capture of York and at the investment of Plattsburgh he had shown a coolness and bravery under fire which had won high praise from his superior officers. The man and the opportunity had met—the outcome is my story of this evening.

I. THE OPPORTUNITY—ALEXIS ST. MARTIN.

On the morning of June 6, a young French Canadian, Alexis St. Martin, was standing in the company's store, "where one of the party was holding a shot gun (not a musket), which was accidentally discharged, the whole charge entering St. Martin's body. The muzzle was not over three feet from him—I think not more than two. The wadding entered as well as pieces of his clothing; his shirt took fire; he fell, as we supposed, dead."

"Dr. Beaumont, the surgeon of the fort, was immediately sent for and reached the wounded man in a very short time, probably three minutes. We had just gotten him on a cot and were taking off some of his clothing. After the doctor had extracted part of the shot, together with pieces of clothing, and dressed his wound carefully, Robert Stuart and others assisting, he left him, remarking: 'The man cannot live thirty-six hours; I will come and see him by and by.' In two or three hours he visited him again, expressing surprise at finding him doing better than he had anticipated. The next day, after getting out more shot and clothing and cutting off ragged edges of the wound, he informed Mr. Stuart in my presence that he thought he would recover."*

The description of the wound has been so often quoted as reported in Beamont's work that I give here the interesting summary which I find in a "Memorial" presented to the Senate and House of Representatives by Beaumont. "The wound was received just under the left breast and supposed at the time to have been mortal. A large portion of the side was blown off, the ribs fractured and openings made into the cavities of the chest and abdomen, through

* Statement of G. G. Hubbard, an officer of the company, who was present when St. Martin was shot, quoted by Dr. J. R. Baily, of Mackinac Island, in his address on the occasion of the Beaumont Memorial Exercises, Mackinac Island, July 10, 1900. The Physician and Surgeon, December, 1900.

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which protruded portions of the lungs and stomach, much lacerated and burnt, exhibiting altogether an appalling and hopeless case. The diaphragm was lacerated and a perforation made directly into the cavity of the stomach, through which food was escaping at the time your memorialist was called to his relief. His life was at first wholly despaired of, but he very unexpectedly survived the immediate effects of the wound, and necessarily continued a long time under the constant professional care and treatment of your memorialist, and by the blessing of God, finally recovered his health and strength.

"At the end of about ten months the wound was partially healed, but he was still an object altogether miserable and helpless. In this situation he was declared a 'common pauper' by the civil authorities of the county, and it was resolved by them that they were not able, nor required, to provide for or support, and finally declined taking care of him, and in pursuance of what they probably believed to be their public duty, authorized by the laws of the territory, were about to transport him in this condition to the place of his nativity in lower Canada, a distance of more than fifteen hundred miles.

"Believing the life of St. Martin must inevitably be sacrificed if such attempt to remove him should be carried into execution at that time, your memorialist, after earnest, repeated, but unavailing remonstrances against such a course of proceedings, resolved, as the only way to rescue St. Martin from impending misery and death, to arrest the process of transportation and prevent the consequent suffering, by taking him into his own private family, where all the care and attention were bestowed that his condition required.

"St. Martin was at this time, as before intimated, altogether helpless and suffering under the debilitating effects of his wounds—naked and destitute of everything. In this situation your memorialist received, kept, nursed, medically and surgically treated and sustained him, at much inconvenience and expense, for nearly two years, dressing his wounds daily, and for considerable part of the time twice a day nursed him, fed him, clothed him, lodged him and furnished him with such necessaries and comforts as his condition and suffering required.

"At the end of these two years he had become able to walk and help himself a little, though unable to provide for his own necessities. In this situation your memorialist re-

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tained St. Martin in his family for the special purpose of making physiological experiments."

In the month of May, 1825, Beaumont began the experiments. In June he was ordered to Fort Niagara, where, taking the man with him, he continued the experiments until August. He then took him to Burlington and Plattsburgh. From the latter place St. Martin returned to Canada, without obtaining Dr. Beaumont's consent. He remained in Canada four years, worked as a voyageur, married and had two children. In 1829 Beaumont succeeded in getting track of St. Martin, and the American Fur Company engaged him and transported him to Fort Crawford on the upper Mississippi. The side and wound were in the same condition as in 1825. Experiments were continued uninterruptedly until March, 1831, when circumstances made it expedient that he should return with his family to lower Canada. Dr. Beaumont often lays stress on the physical vigour of St. Martin as showing how completely he had recovered from the wound. In November, 1832, he again engaged himself to submit to another series of experiments in Plattsburgh and Washington. The last recorded experiment is in November, 1833. In 1833 he was enrolled in the United States Army at Washington as sergeant Alexis St. Martin, of a detachment of orderlies stationed at the War Department. He was then 28 years of age, and was five feet five inches in eight. Among the papers there are two articles of agreement, both signed by the contracting parties, one dated October 9, 1833, and the other November 7 of the same year. In the former he bound himself for a term of one year to "serve, abide and continue with the said William Beaumont, wherever he shall go or travel or reside in any part of the world his covenant servant and diligently and faithfully, etc., . . . , that he, the said Alexis, will at all times during the said term when thereto directed or required by said William, submit to assist and promote by all means in his power such philosophical or medical experiments as the said William shall direct or cause to be made on or in the stomach of him, the said Alexis, either through and by means of the aperture or opening thereto in the side of him, the said Alexis, or otherwise, and will obey, suffer and comply with all reasonable and proper orders of or experiments of the said William in relation thereto and in relation to the exhibiting and showing of his said stomach and the powers, properties thereto and of the appurten

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ances and the powers, properties and situation and state of the contents thereof." The agreement was that he should be paid his board and lodging and $150 for the year. In the other agreement it is for two years and the remuneration $400. He was paid a certain amount of the money down.

In 1846 Beaumont sent his son Israel for Alexis, and in a letter dated August 9, 1846, his son writes from Troy: "I have just returned from Montreal, but without Alexis. Upon arriving at Berthier I found that he owned and lived on a farm about fifteen miles southwest of the village." Nothing would induce him to go.

The correspondence with Mr. Morrison in 1851 and in 1852 is most voluminous, and Dr. Beaumont offered Alexis $500 for the year, with comfortable support for his family. He agreed at one time to go, but it was too late in the winter and he could not get away.

The last letter of the series is dated October 15, 1852, and is from Dr. Beaumont to Alexis, whom he addresses as *Mon Ami*. Two sentences in this are worth quoting: "Without reference to past efforts and disappointments —or expectation of ever obtaining your services again for the purpose of experiments, etc., upon the proposals and conditions heretofore made and suggested, now proffer to you in faith and sincerity, new, and I hope satisfactory terms and conditions to ensure your prompt and faithful compliance with my most fervent desire to have you again with me—not only for my own individual gratification, and the benefits of medical science, but also for your own and family's present good and future welfare." He concluded with, "I can say no more Alexis—you know what I *have* done for you many years since—what I have been *trying*, and am still anxious and wishing to do with and for you—what efforts, anxieties, anticipations and disappointments I have suffered from your non-fulfilment of my expectations. Don't disappoint me more nor forfeit the bounties and blessings reserved for you."

So much interest was excited by the report of the experiments that it was suggested to Beaumont that he should take Alexis to Europe and submit him there to a more extended series of observations by skilled physiologists. Writing June 10, 1833, he says: "I shall engage him for five or six years if he will agree, of which I expect there is no doubt. He has always been pleased with the idea of

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going to France. I feel much gratified at the expression of Mr. Livingston's desire that we should visit Paris and shall duly consider the interest he takes in the subject and make the best arrangements I can to meet his views and yours." Mr. Livingston, the American minister, wrote from Paris March 18, 1834, saying that he had submitted the work to Orfila and the Academy of Sciences, which had appointed a committee to determine if additional experiments were necessary and whether it was advisable to send to America for Alexis. Nothing, I believe, ever came of this, nor, so far as I can find, did Alexis visit Paris. Other attempts were made to secure him for purposes of study. In 1840 a student of Dr. Beaumont's, George Johnson, then at the University of Pennsylvania, wrote saying that Dr. Jackson had told him of efforts made to get Alexis to London, and Dr. Gibson informed him that the Medical Society of London had raised £300 or £400 to induce St. Martin to come, and that he, Dr. Gibson, had been trying to find St. Martin for his London friends. There are letters in the same year from Dr. R. D. Thompson, of London, to Professor Silliman urging him to arrange that Dr. Beaumont and Alexis should visit London. In 1856 St. Martin was under the observation of Dr. Francis Gurney Smith, in Philadelphia, who reported a brief series of experiments—so far as I know the only other report made on him.*

St. Martin had to stand a good deal of chaffing about the hole in his side. His comrades called him "the man with a lid on his stomach." In his memorial address Mr. C. S. Osborn, of Sault Ste. Marie, states that Miss Catherwood tells a story of Etienne St. Martin fighting with Charlie Charette because Charlie ridiculed his brother. Etienne stabbed him severely and swore that he would kill the whole brigade if they did not stop deriding his brother's stomach.

At one time St. Martin travelled about exhibiting the wound to physicians, medical students and before medical societies. In a copy of Beaumont's work, formerly belonging to Austin Flint, jun., and now in the possession of a physician of St. Louis, there is a photograph of Alexis sent to Dr. Flint. There are statements made that he went to Europe, but of such a visit I can find no record.

My interest in St. Martin was of quite the general character of a teacher of physiology, who every session referred to his remarkable wound and showed Beaumont's

* Medical, Examiner, 1856, and Experiments in Digestion, Philadelphia, 1836.

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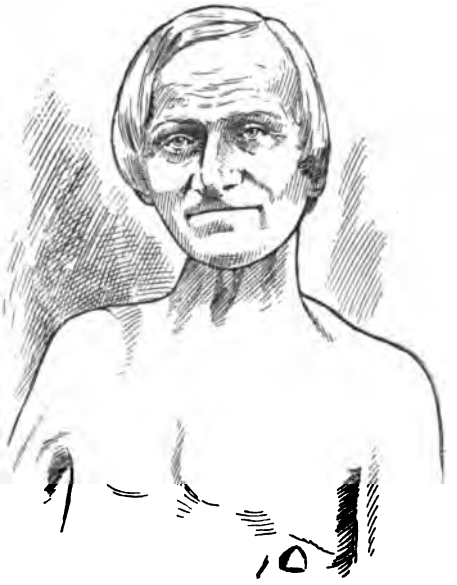
book with the illustration. In the spring of 1880, while still a resident of Montreal, I saw a notice in the newspapers of his death at St. Thomas. I immediately wrote to a physician and to the parish priest, urging them to secure me the privilege of an autopsy and offering to pay a fair sum for the stomach, which I agreed to place in the Army Medical Museum in Washington, but without avail. Subsequently through the kindness of the Hon. Mr. Justice Baby, I obtained the following details of St. Martin's later life, and the picture here given, which was taken the year before his death so as to show the wound, which I here show you. Judge Baby writes to his friend, prof. D. C. McCallum, of



Montreal, as follows: "I have much pleasure to-day in placing in your hands such information about St. Martin as Rev. Mr. Chicoine, Curé of St. Thomas, has just handed over to me. Alexis Bidigan, *dit* St. Martin, died at St. Thomas de Joliette on the 24th of June, 1880, and was buried in the cemetery of the parish on the 28th of the same month. The last sacraments of the Catholic church were ministered to him by the Rev. Curé Chicoine, who also ttended at his burial service. The body was then in such an advanced stage of decomposition that it could not be ad

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mitted into the church but had to be left outside during the funeral service. The family resisted all requests—most pressing as they were—on the part of the members of the medical profession for an autopsy, and also kept the body at home much longer than usual and during a hot spell of weather, so as to allow decomposition to set in and baffle, as they thought, the doctors of the surrounding country and others. They had also the grave dug eight feet below the surface of the ground in order to prevent any attempt at a resurrection. When he died St. Martin was 83 years of age, and left a widow, whose maiden name was Marie Joly.

II. THE BOOK.

In the four periods in which Alexis had been under the care and study of Beaumont a large series of observations had been recorded, amounting in all to 238. A preliminary account of the case and of the first group of observations appeared in the *Philadelphia Medical Record* in January, 1825. During the stay in Washington in 1832 the great importance of the observations had become impressed on the Surgeon-General, Dr. Lovell, who seems to have acted in a most generous and kindly spirit. Beaumont tried to induce him to undertake the arrangement of the observations, but Lovell insisted that he should do the work himself. In the spring of 1833 Alexis was taken to New York and there shown to the prominent members of the profession, and careful drawings and coloured sketches were made of the wound by Mr. King. A prospectus of the work was issued and was distributed by the Surgeon-General, who speaks in a letter of sending them to Dr. Franklin Bache and to Dr. Stewart, of Philadelphia, and in a letter from Dr. Bache to Dr. Beaumont acknowledging the receipt of a bottle of gastric juice, Bache states that he has placed the prospectus in Mr. Judah Dobson's store and has asked for subscribers. Beaumont did not find New York a very congenial place. He complained of the difficulty of doing the work owing to the vexatious social intercourse. He applied for permission to go to Plattsburgh, in order to complete the book. After having made inquiries in New York and Philadelphia about terms of publication, he decided, as the work had to be issued at his own expense, that it could be as well and much more cheaply printed at Plattsburgh, where he would also have the advice and help of his cousin, Dr. Samuel Beaumont.

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In a letter to the Surgeon-General, dated June 10, 1833, he acknowledges the permission to go to Plattsburgh, and says: "I shall make my arrangements to leave here for Pl. in about a week, to *rush* the execution of the book as fast as possible. I am now having the drawings taken by Mr. King engraved here."

The summer was occupied in making a fresh series of experiments and getting the work in type. On December 3 he writes the Surgeon-General that the book will be ready for distribution in a few days and that 1,000 copies will be printed.

The work is an octavo volume of 280 pages, entitled "Experiments and Observations on the Gastric Juice and the Physiology of Digestion," by William Beaumont, M. D., Surgeon in the United States Army. Plattsburgh. Printed by F. P. Allen, 1833. While it is well and carefully printed, the paper and type are not of the best, and one can not but regret that Beaumont did not take the advice of Dr. Franklin Bache, who urged him strongly not to have the work printed at Plattsburgh, but in Philadelphia, where it could be done in very much better style. The dedication of the work to Joseph Lovell, M. D., Surgeon-General of the United States Army, acknowledges in somewhat laudatory terms the debt which Beaumont felt he owed to his chief, who very gratefully acknowledges the compliment and the kindly feeling, but characterizes the dedication as "somewhat apocryphal."

The work is divided into two main portions: first, the preliminary observations on the general physiology of digestion in seven sections: Section I. Of Aliment: Section, II. Of Hunger and Thirst; Section III. Of Satisfaction and Satiety; Section IV. Of Mastication, Insalivation and Deglutition; Section V. Of Digestion by the Gastric Juice; Section VI. Of the Appearance of the Villous Coat, and of the Motions of the Stomach; Section VII. Of Chylification and Uses of the Bile and Pancreatic Juice. The greater part of the book is occupied by the larger section of the detailed account of the four series of experiments and observations. The work concludes with a series of 51 inferences from the foregoing experiments and observations.

The subsequent history of the book itself is of interest, and may be dealt with here. In 1834 copies of Plattsburgh edition, printed by F. P. Allen, were issued by Lilly, Wait & Co., of Boston.

In the Beaumont correspondence there are many letters

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from a Dr. McCall, in Utica, N. Y., who was an intimate friend of a Mr. Wm. Combe, a brother of the well-known physiologist and popular writer, Dr. Andrew Combe, of Edinburgh. Doubtless it was through this connection that in 1838 Dr. Combe issued an edition in Scotland, with numerous notes and comments.

The second edition was issued from Burlington, Vt., in 1847, with the same title page, but after Second Edition there are the words, Corrected by Samuel Beaumont, M. D., who was Dr. William Beaumont's cousin. In the preface to this edition the statement is made that the first edition, though a large one of 3,000 copies, had been exhausted. This does not agree with the statement made in a letter of December 3, 1833, to the Surgeon-General, stating that the edition was to be 1,000 copies. Of course, more may have been printed before the type was distributed.

A German edition was issued in 1834, with the following title: "Neue Versuche und Beobachtungen ueber den Magensaft und die Physiologie der Verdauung, auf eine hochst merkwurdige Weise wahrend einer Reihe von 7 Jahren, an einen und demselben Subject angestellt." Beaumont's earlier paper, already referred to, was abstracted in the Magazin der auslandischen Litteratur der gesammten eilkunde, amburg, 1826, and also in the Archives generales de Medecine, Paris, 1828. I cannot find that there was a French edition of the work.

The "Experiments and Observations" attracted universal attention, both at home and abroad. The journals of the period contained very full accounts of the work, and within a few years the valuable additions to our knowledge filtered into the text-books of physiology, which to-day in certain descriptions of the gastric juice and of the phenomena of digestion even the very language of the work is copied.

III. THE VALUE OF BEAUMONT'S OBSERVATIONS.

There had been other instances of artificial gastric fistula in man which had been made the subject of experimental study, but the case of St. Martin stands out from all others on account of the ability and care with which the experiments were conducted. As Dr. Combe says, the value of these experiments consists partly in the admirable opportunities for observation which Beaumont enjoyed, and

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partly in the candid and truth-making spirit in which all his inquiries seem to have been conducted. "It would be difficult to point out any observer who excels him in devotion to truth and freedom from the trammels of theory or prejudice. He tells plainly what he saw and leaves every one to draw his own inferences, or where he lays down conclusions he does so with a degree of modesty and fairness of which few perhaps in his circumstances would have been capable."

To appreciate the value of Beaumont's studies it is necessary to refer for a few moments to our knowledge of the physiology of digestion in the year 1882, the date of the publication. Take for example, "The Work on Human Physiology" (published in the very year of the appearance of Beaumont's book), by Dunglison, a man of wide learning and thoroughly informed in the literature of the subject. The five or six old theories of stomach digestion, concoction, putrefaction, trituration, fermentation and maceration, are all discussed, and Wm. Hunter's pithy remark is quoted, "some physiologist will have it, that the stomach is a mill, others, that it is a fermenting vat, others, again, that it is a stew-pan; but, in my view of the matter, it is neither a mill, a fermenting vat nor a stew-pan; but a stomach, gentlemen, a stomach."

The theory of chemical solution is accepted. This had been placed on a sound basis by the experiments of Reamur, Spallanzani and Stevens, while the studies of Tiedemann and Gamelin and of Prout had done much to solve the problems of the chemistry of the juice. But very much uncertainty existed as to the phenomena occurring during digestion in the stomach, the precise mode of action of the juice, the nature of the juice itself and its action outside the body. On all these points the observations of Beaumont brought clearness and light where there had been previously the greatest obscurity.

The following may be regarded as the most important of the results of Beaumont's observations: First, the accuracy and completeness of description of the gastric juice itself. You will all recognize the following quotation, which has entered into the text-books and passes current to-day: "Pure gastric juice, when taken directly out of the stomach of a healthy adult, unmixed with any other fluid, save a portion of the mucus of the stomach with which it is most commonly and perhaps always combined, is a clear, transparent

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fluid ; inodorous ; a little saltish, and very perceptibly acid: Its taste, when applied to the tongue, is similar to this mucilaginous water slightly acidulated with muriatic acid. It is readily diffusible in water, wine or spirits ; slightly effervesces with alkalies, and is an effectual solvent of the *materia alimentaria*. It possesses the property of coagulating albumen, in an eminent degree ; is powerfully antiseptic, checking the putrefaction of meat, and effectually restorative of healthy action, when applied to old, fetid sores and foul, ulcerating surfaces."

Secondly, the confirmation of the observation of Prout that the important acid of the gastric juice was the muriatic of hydrochloric. An analysis of St. Martin's gastric juice were made by Dunglison, at that time a professor in the University of Virginia, and by Benjamin Silliman, of Yale, both of whom determined the presence of free hydrochloric acid. A specimen was sent to the distinguished Swedish chemist, Berzelius, whose report did not arrive in time to be included in the work. In a letter dated July 19, 1834, he writes to Professor Silliman that he had not been able to make a satisfactory analysis of the juice. The letter is published *Silliman's Journal*, Vol. 27, July, 1835.

Thirdly, the recognition of the fact that the essential elements of the gastric juice and the mucus were separate secretions.

Fourthly, the establishment by direct observation of the profound influence on the secretion of the gastric juice and on digestion of mental disturbances.

Fifthly, a more accurate and fuller comparative study of the digestion in the stomach with digestion outside the body, confirming in a most elaborate series of experiments the older observations of Spallanzani and Stevens.

Sixthly, the refutation of many erroneous opinions relating to gastric digestion and the establishment of a number of minor points of great importance, such as, for instance, the rapid disappearance of water from the stomach through the pylorus, a point brought out by recent experiments, but insisted on and amply proven by Beaumont.

Seventhly, the first comprehensive and thorough study of the motions of the stomach, observations on which, indeed, are based the most of our present knowledge.

And lastly, a study of the digestibility of different articles of diet in the stomach, which remains to-day one of the most important contributions ever made to practical dietetics.

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The greater rapidity with which solid food is digested the injurious effects on the stomach of tea and coffee, when taken in excess, the pernicious influence of alcoholic drinks on the digestion, are constantly referred to. An all-important practical point insisted on by Beaumont needs emphatic reiteration to this generation: "The system requires much less than is generally supplied to it. The stomach disposes of a definite quantity. If more be taken than the actual wants of the economy require, the residue remains in the stomach and becomes a source of irritation and produces a consequent aberration of function, or passes into the lower bowel in an undigested state, and extends to them its deleterious influence. Dyspepsia is oftener the effect of over-eating and over-drinking than of any other cause."

In reality Beaumont anticipated some of the most recent studies in the physiology of digestion. Doubtless many of you have heard of Professor Pawlow's, of St. Petersburg, new work on the subject. It has been translated into German, and I see that an English edition is advertised. He has studied the gastric juice in an isolated pouch, ingeniously made at the fundus of the stomach of the dog, from which the juice could be obtained in a pure state. One of his results is the very first announced by Beaumont and confirmed by scores of observations on St. Martin, viz., that, as he says, "the gastric juice never appears to be accumulated in the cavity of the stomach while fasting." Pawlow has shown very clearly that there is a relation between the amount of food taken and the quantity of gastric juice secreted. Beaumont came to the same conclusion: "when aliment is received the juice is given in exact proportion to its requirements for solution." A third point on which Pawlow lays stress is the curve of secretion of the gastric juice, the manner in which it is poured out during digestion. The greatest secretion, he has shown, takes place in the earlier hours. On this point hear Beaumont: "It (the gastric juice) then begins to exude from the proper vessels and increase in proportion to the quantity of aliment naturally required and received." And again: "When a due and moderate supply of food has been received it is probable that the whole quantity of gastric juice for its complete solution is secreted and mixed with it in a short time." A fourth point, worked out beautifully by Pawlow, is the adaptation of the juice to the nature of the food, on which I do not see any reference by Beaumont, bu there are no experiments more full than those in which h

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deals with the influence of exercise, weather and the emotions on the quantity of the juice secreted.

IV.—MAN AND DOCTOR.

Sketches of Dr. Beaumont's life have appeared from time to time. There is a worthy memoir by Dr. T. Reyburn in the *St. Louis Medical and Surgical Journal*, 1854, and Dr. A. J. Steele at the first annual commencement of the Beaumont Medical College, 1887, told well and graphically the story of his life. A few years ago Dr. Frank J. Lutz, of this city, sketched his life for the memorial meeting of the Michigan State Medical Society on the occasion of the dedication of a Beaumont monument.

Among the papers kindly sent to me by his daughter, Mrs. Keim, are many autobiographical materials, particularly relating to his early studies and to his work as a surgeon in the war of 1812. There is an excellent paper in the handwriting, it is said, of his son, giving a summary of the earlier period of his life. So far as I know this has not been published and I give it in full.

"Dr. William Beaumont was born in the town of Lebanon, Conn., on the 21st day of November, A.D. 1785. His father was a thriving farmer and an active politician of the proud old Jeffersonian school, whose highest boast was his firm support and strict adherence to the honest principles he advocated. William was his third son, who in the winter of 1806-7, in the 22nd year of his age, prompted by a spirit of independence and adventure, left the paternal roof to seek a fortune and a name. His outfit consisted of a horse and cutter, a barrel of cider and one hundred dollars of hard-earned money. With this he started, laying his course northwardly, without any particular destination, honour his rule of action, truth his only landmark, and trust placed implicitly in Heaven. Traversing the western part of Massachusetts and Vermont in the spring of 1807, he arrived at the little village of Champlain, N. Y., on the Canada frontier—an utter stranger, friendless and alone. But honesty of purpose and true energy invariably work good results. He soon gained the people's confidence and was entrusted with their village school, which he conducted about three years, devoting his leisure hours to the study of medical works from the library of Dr. Seth Pomeroy, his first patron. He then went over to St. Albans, Vt., where he entered the office

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of Dr. Benjamin Chandler and commenced a regular course of medical reading, which he followed for two years, gaining the utmost confidence and esteem of this kind preceptor and friend. About this time the war of 1812 commenced and he applied for an appointment in the U. S. army, successfully. He was appointed assistant surgeon to the sixth infantry, and joined his regiment at Plattsburgh, N. Y., on the 13th of September, 1812. On the 19th of March, 1813, he marched from Plattburgh with the first brigade for Sackett's Harbour, where they arrived on the 27th inst. Here he remained in camp till the 22nd of April when he embarked with the troops on Lake Ontario.

"His journal tells in an interesting manner the story of a short engagement in which the enemy lost nearly a third of their men and were soon compelled to quit the field, leaving their dead and wounded strewn in every direction. Then they blew up their magazine, and Beaumont says: 'Over 300 were wounded and 60 killed by stones of all dimensions falling like a shower of hail, in the midst of our ranks. Distressing scene ensued in the hospital. Nothing is heard but the agonizing groans and supplications of the wounded and the dying. The surgeons wade in blood cutting off arms and legs and trepaning heads, while the

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poor sufferers cry, 'O, my God! Doctor, relieve me from this misery! I cannot live!' 'Twas enough to touch the veriest heart of steel and move the most relentless savage. Imagine the shocking scene, where fellow beings lie mashed and mangled—legs and arms broken and sundered—heads and bodies bruised and mutilated to disfigurement! My deepest sympathies were roused—I cut and slashed for 36 hours without food or sleep.'

"In 1816 he settled in Plattsburgh and remained there four years in successful practice. In the meantime his army friends had persuaded him to join the service again, and having applied, he was reappointed in 1820 and ordered to Ft. Mackinac as post surgeon. At the end of the first year he obtained leave of absence, returned to Plattsburgh and married one of the most amiable and interesting ladies of that place. (She still survives her honoured husband, and in her green old age is loved devotedly by all who know her). He returned to Mackinac the same year and in 1822 came in possession of Alexis St. Martin, the subject of his 'Experiments on the Gastric Juice.' By the accidental discharge of his gun, while hunting, St. Martin had dangerously wounded himself in the abdomen and came under the treatment of Dr. Beaumont, who healed the wound (in itself a triumph of skill almost unequalled) and in 1825 commenced a series of experiments, the results of which have been a world-wide publication. These experiments were continued, with various interruptions, for eight years, during which time he was ordered from post to post, now at Niagara, N.Y., anon at Green Bay., Mich., and finally at Fort Crawford, on the Mississippi. In 1834 he was ordered to St. Louis where he remained in service till 1839, when he resigned. He then commenced service with the citizens of St. Louis, and from that time till the period of his last illness, enjoyed an extensive and distinguished pratice, interrupted only by the base attacks of a few disgraceful and malicious knaves (self-deemed members of the medical profession), who sought to destroy a reputation which they could not share. They gained nothing except some little unenviable notoriety and they have skulked away like famished wolves, to die in their hiding places.

"The dates of Beaumont's commissions in the army are as follows: Surgeon's Mate, sixth regiment of infantry, December 2, 1812; Cavalry, March 27, 1819; Post Surgeon, December 4, 1819; Surgeon 1st regiment and Surgeon, November 6, 1826.

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"From the biographical sketches of Reyburn, Steele and Lutz, and from the personal reminiscences of his friends, Drs. J. B. Johnson, S. Pollak and Wm. McPheeters, who fortunately remains with you, full of years and honours, we gather a clearly-defined picture of the latter years of his life. It is that of a faithful, honest, hard-working practitioner, doing his duty to his patients and working with zeal and ability for the best interests of the profession. The strong common sense which he exhibited in his experimental work made him a good physician and a trusty adviser in cases of surgery. Among his letters there are some interesting pictures of his life, particularly in his letters to his cousin, Dr. Samuel Beaumont.

"He continued at work until March, 1853, when he had an accident—a fall while descending some steps. A few weeks later a carbuncle appeared on the neck and proved fatal April 25. 'One who knew him well wrote the following estimate (quoted by Dr. F. J. Lutz in his sketch of Beaumont):

"'He was gifted with strong, natural powers, which, working upon an extensive experience in life, resulted in a species of natural sagacity, which, as I suppose, is something peculiar in him, and not to be attained by any course of study. His temperament was ardent, but never got the better of his instructed and disciplined judgment, and whenever or however employed he ever adopted the most judicious means for attaining ends that were always honourable. In the sick-room he was a model of patience and kindness, his intuitive perceptions, guiding a pure benevolence, never failed to inspire confidence, and thus he belonged to that class of physicians whose very presence affords nature a sensible relief.'"

You do well, citizens of St. Louis and members of our profession, to cherish the memory of William Beaumont. Alive you honoured and rewarded him, and there is no reproach against you of neglected merit and talents unrecognized. The profession of the northern part of the State of Michigan has honoured itself in erecting a monument to his memory near the scene of his disinterested labours in the cause of humanity and science. His name is linked with one of your educational institutions and joined with that of a distinguished laborer in another field of practice. But he has a far higher honour than any you can give him here—the honour that can only come when the man and the

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opportunity meet—and match. Beaumont is the pioneer physiologist of this country, the first to make an important and enduring contribution to this science. His work remains a model of patient, persevering investigation, experiment and research, and the highest praise we can give him is to say that he lived up to and fulfilled the ideas with which he set out and which he expressed when he said: "'Truth, like beauty, when unadorned, is adorned the most,' and, in prosecuting these experiments and inquiries, I believe I have been guided by its light."—*Medical Fortnightly.*

Progress of Medical Science.

MEDICINE AND NEUROLOGY.

IN CHARGE OF

J. BRADFORD McCONNELL, M.D.

Associate Professor of Medicine and Neurology, and Professor of Clinical Medicine University of Bishop's College; Physician Western Hospital.

CALCIUM SALTS TO CURE NERVOUS DISEASES.

Jacques Loeb claims to have discovered that muscular and nervous diseases, such as St Vitus' dance, paralysis agitans, locomotor ataxia, and insomnia, can be cured by the administration of calcium salts. His conclusion is that the presence of calcium salts in the muscles prevents their twitching, and that their absence leads to the various nervous disturbances mentioned; hence the administration of calcium salts as the remedial measure.—*American Medicine.*

WHITE AND RED MEATS

Kauffmann and Mohr (*Zeitschrift fur klinische Medicin*) have shown that there is practically no difference between red and white meats as regards their composition. Both contain practically the same amount of extractives, and are equally irritating to the kidneys. Hence, there is no scientific foundation for the common practice of forbidding red meats and allowing white meats.

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MESOTAN—AN ANTIRHEUMATIC FOR EXTERNAL USE.

Th. Floret (*Deutsche Medic. Wochenschr.*, 1902, No. 42), H. Roeder (*Muenchener Medic. Wochenschr.*, No. 50, 1902). —The value of the external use of salicylic acid in acute articular rheumatism has long been recognized. Bourget in France and v. Ziemssen in Germany first obtained good results by means of the local use of salicylic acid ointments. In America the external use of oil of wintergreen was first recognized as superior to that of salicylic acid, and is still in great favour. Its great drawback, however, is its penetrating odour, as well as the dermatitis it often produces; the European chemists have accordingly for some time been searching for an efficient substitute. This the Elberfeld Farbenfabriken now claim to offer the medical profession in mesotan, a methoxymthylester of salicylic acid, and, therefore, closely related to oil of wintergreen, of which methylsalicylat forms over ninety per cent. Mesotan is a clear, yellowish, oily liquid with a faint aromatic odour. It is easily mixable with alcohol, ether, chloroform and oils, but nearly insoluble in water. It is readily absorbed through the skin, and is thereupon split up by the alkaline sera of the body. Soon after its application the salicylic reaction may be obtained in the urine.

According to Floret, the external use of mesotan in rheumatic joint or muscle affections is so promptly and certainly curative that it may well be used as a diagnostic measure when the rheumatic nature of such an affection seems doubtful. Its action is most striking in acute muscular rheumatism, in which a single application often suffices for a cure. In acute articular rheumatism, even in severe multiple affections with high fever, the duration of the attack is greatly shortened and the pain almost instantly relieved. It has been found useful also in rheumatic anginas, pleurisy, etc., but is quite inactive in traumatic or gonorrheal joint affections or in neuralgias.

The drug is best used mixed with an equal quantity of olive oil. A small quantity of this mixture is rubbed into the affected joint; less than a teaspoonful usually suffices. One to three applications, according to the severity of the attack, are made daily; the joints do not need to be covered with a dressing as when using oil of wintergreen.

Roeder is particularly enthusiastic regarding the efficacy of mesotan in subacute and chronic arthritis. He reports a

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number of cases, of which the following will serve as specimens:

Case 22.—Painful swelling of the right great toe for four months. Skin reddened over the affected joint, walking difficult. A single application was followed by a marked improvement that fairly astounded the patient.

Case 24.—Treated for eight weeks as gout. After a course of aspiring 3j daily, patient was just able to walk with the aid of a cane. All the joints of both feet were swollen and painful, the skin over them reddened. After a single application of mesotan he was able to walk with comparative comfort; in eight days he was well.

Cases of true arthritis deformans showed little or no improvement under the influence of mesotan.

The above results seem too good to be true, and it will be safe to maintain a somewhat skeptical attitude towards them. Nevertheless, the drug clearly merits a trial.—*Interstate Medical Journal.*

CURED FOR BLOOD POISONING.

What is regarded by many physicians as one of the most important medical discoveries of the day has been made by Dr. Charles C. Barrows, a gynecologist, who is one of the visiting physicians to Bellevue Hospital, New York, and has been connected with that institution for sixteen years.

Dr. Carrow's cure for septicemea, or blood poisoning, is an intervenous injeetion of a weak solution of formaldehyde. The case reported was that of a patient declared to be beyond medical aid. The temperature had risen to 108 with a pulse of 160. The treatment consisted of an injection of 500 c c's of a 1—5,000 solution of formaldahyde into the vein of the arm. The patient rallied at once, both pulse and temperature showing a marked decline almost immediately. A slight raise of temperature the second day was followed by a second injection of 750 c c's of the solution. This reduced the temperature to normal, and the patient is now convalescent. This is said to be the first case in medical history where a patient has recovered with such a raise of pulse and temperature.

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THE SLEEPING SICKNESS.

The School of Tropical Medicine has issued a report on the sleeping sickness which is now devastating Uganda. Though it was discovered only a few years ago, it is computed that the disease has already killed from 20,000 to 30,000 people, and is spreading to new areas with increasing virulence. Its extension to the north will be of the greatest menace to Egypt. Scientific reports describe the sleeping sickness as meningitis. It begins insidiously with the changes in the mental attitude of the patient. From that time the disease progresses and the patient becomes stupid and restless, and, after other symptoms have passed, become comatose and dies. The duration of the complaint varies from a month in acute cases to six months or more in others. The disease is almost invariably fatal, and although taking longer to cause death than hydrophobia, may be classed with the latter as one of the most fatal illnesses known to mankind. It is contagious and its spread is assured by overcrowding of many individuals in the same huts. The depopulation of many large and thickly populated areas is making itself felt, and the outlook is very gloomy. The only scheme yet devised for the prevention of the disease is the isolation of new cases.—*St. Louis Med. Review.*

A cure for tetarus has been found in the formalin compound, according to Baltimore physicians. Since January a series of experiments has been performed in the Maryland Veterinary Hospital. These experiments have proved that tetanus may be cured by formalin, and it is the opinion that the cure may be applied to man with the same result.

The subject for treatment was a magnificent thoroughbred horse. Lockjaw resulted from an injured eye. Dr. Spranklin first injected into the jugular vein of the animal the formalin compound. Within five hours the animal which was thought to be dying revived, and its improvement was marked for three days, when it appeared again to be dying. The solution was injected a second time, and within five hours the same improvement that had marked the first injection was noticed.

Later the animal had another relapse, and a third injection of the same size was used. Since then there has been no more trouble, and the animal is now declared to be entirely cured.—*St. Louis Med. Review.*

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HYPODERMOCLYSIS IN PNEUMONIA WITH REPORT OF A CASE.*

M. Kahn, Leadville, observes that the credit for the first use of salt solution hypodermically for the cure of pneumonia doubtless belongs to Dr. F. P. Henry, of Philadelphia, who is said to have used it as early as 1890. W. C. Johnson gives the credit to C. A. Penrose, of Baltimore, who reported his case in July, 1899, but unquestionably Dr. Johnson was not familiar with Dr. Henry's earlier work.

With the modern theory concerning the pathology of pneumonia, viz., that it is a general toxemia with local manifestations, our one endeavour must be to occasion so far as possible a diminution in the amount of toxin already in the system and to inhibit to the greatest extent its reformation. At present this is best accomplished by hypodermoclysis. Penrose found that the infusion of salt solution in several cases of pneumonia promoted the activity of the kidneys and sweat glands, relieved delirium, reduced temperature, and increased the force of the heart. Lenhartz records that the results of intravenous saline injections in acute diseases in children were increased heart force and lowered blood-pressure. The consequent lavage of the entire system aided diuresis and diminished to toxins, caused rapid excretion of chlorids, and the high specific gravity the urine showed that much waste was being eliminated.

It is no thonger a theory but an established fact that subcutaneous infusion of salt solution is invaluable for renal elimination of poisonous accumulations. Moreover the best safeguard against heart failure in pneumonia is secured by diminishing the toxins, which in the light of our present knowledge is best effected by the exhibition of subcutaneous salt injection.—*St. Louis Med. Review.*

THE DIAGNOSIS OF ENTERIC FEVER.

The difficulties that surround the diagnosis of typical enteric fever are manifold. Sooner or later the most careful practitioner is certain to find himself cast upon that particular rock which lies ahead of the medical pilot. Various tubercular conditions often closely simulate typhoid fever, and should be carefully excluded from all doubtful cases. Tubercular meningitis and acute miliary tuberculosis are

* American Medicine, Feb. 7, 1903.

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often extremely difficult to differentiate, more especially the latter when complicated with tuberculosis of the intestines, with attendant diarrhea and swollen abdomen. Even the more chronic condition of tuberculous peritonitis may resemble typhoid fever so nearly as to lead to confusion between the two affections. Perhaps the most common source of evil is to mistake enteric fever for primary pneumonia. The latter malady, when of the extreme type, may be difficult to distinguish. As a complication of enteric fever, it occurs in the latter stages. The symptoms accompanying appendicitis and perityphlitis often suggest typhoid fever, but the two affections can usually be distinguished by a due consideration of the local signs and symptoms. In its early stages the bowel fever is often mistaken for influenza. Ulcerative endocarditis and pyemia are occasional pitfalls, especially when the former causes intestinal hemorrhage from emboli m. The intermittent malarial fevers are sometimes very difficult to distinguish from typhoid. Unfortunately, Widal's serum test is not invariably positive in its results. It, nevertheless, offers valuable evidence after the seventh to the twentieth day of the fever, and should be repeated several times where results are negative. A full recognition of the risk of overlooking typhoid fever is perhaps the greatest safeguard against error that can be placed in the hands of the medical practitioner.—*Med. Press and Circular.*

TONSILLITIS.

Mill's medicinal treatment is to gargle with cheap claret wine, to obtain the benefit of the tannic acid therein, every two or three hours, or oftener. Aconite in small doses is often serviceable in simple tonsillitis, 10-per-cent. solution 8-drop doses every hour, preferably in water. If we find very high fever, pulse full and bounding, face flushed, eyes red and evidence of intense congestion of the throat, a 1-per-cent. solution of belladonna is the best remedy. For follicular tonsillitis the remedy *par excellence* is phytolacca in 1-drop doses as a 1-per-cent. solution, every one or two hours, according to the severity of the case. If suppuration does occur nothing will clear it up more quickly than calcium sulphide in $^1/_{100}$-grain doses.—*Philadelphia Medical Journal.*

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LOSS OF KNEE-JERKS IN CROUPOUS PNEUMONIA IN CHILDREN.

In the year 1897 M. Pfaundler was struck by the frequency of loss or marked diminution of the knee-jerks in children admitted on account of croupous pneumonia. He paid particular attention to the state of the knee-jerk in all cases of croupous pneumonia during the last seven years in the children's clinic in Graz, and found that among 200 cases of genuine croupous pneumonia the knee-jerk was either absent or symmetrically diminished in 55 of the children, that is, in 27.5 per cent. of the cases. In healthy children the knee-jerk is very rarely diminished, and is nearly always easy to elicit. As a rule, the absent reflex was noted while the temperature was high, but at times it was seen after the temperature had come down. Absence of the knee-jerk was mostly seen in children not twelve years of age and seldom in infants; but since this form of pneumonia is rare in infancy, he makes the last remark reservedly. The localization of the pneumonic process has no influence in the presence or absence of it. On the other hand, the cases with diminished or absent knee-jerk were noted to be frequently severe ones and often affected with early cerebral symptoms. The type of case in which this peculiarity was noted was not different from the ordinary case. In cases of lobular pneumonia he finds that the knee-jerk is never diminished. Pfaundler is astonished that this peculiarity of croupous pneumonia should not have been noticed before, as he found it much more frequently than herpes in the same condition. The knee-jerk may be diminished or absent before the physical signs have developed and will then be found of diagnostic importance, as also in differentiating between croupous pneumonia and early meningitis.—*British Medical Journal.*

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SURGERY.

IN CHARGE OF

ROLLO BAMPBELL, M.D.,

Lecturer on Surgery, University of Bishop's College; Assistant Surgeon, Western Hospital;

AND

GEORGE FISK, M.D.,

Instructor in Surgery, University of Bishop's College; Assistant Surgeon, Western Hospital.

PRIMARY DRESSING IN OPEN FRACTURE.

Preparation of the limb involves three or four things.

1. The suppression of all free hemorrhage.

2. A quick cleansing of the mutilated parts; as precise and ingenious asepsis is not to be attempted if much time is to be consumed.

3. We should adjust the fragments if this is not attended with difficulty.

4. We will apply our dressings and splinting in order to secure safety in transport.

In former times, in New York, the pernicious custom was in vogue of placing the junior or least experienced of the house staff on ambulance duty. Now he must have had hospital experience in the wards before he is assigned to this important service.

It is obvious to anyone that the primary care of badly crushed limbs is a serious and important one, on the judicious exercise of which many a life and limb depends.

Fracture-hemorrhage is usually venous and easily controlled by moderate pressure; but sometimes the larger arteries are opened, and the flow of blood is large and steady. This is most frequently noted after railroad injury when the limb is nearly crushed off. Hemorrhage should be controlled before we move the patient.

Hemostasis may be most promptly effected by the rubber constrictor. This, however, is an unsurgical and dangerous expedient.

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Force sufficient to arrest all bleeding by *Esmarch's bandage* causes a most painful crushing of the soft parts; moreover, it involves damage to the larger blood trunks; secondary hemorrhage often follows its employment, and it favours gangrene. Artificial stenosis of all the vessels by circular pressure en masse, by leaving a crippled circulation, very greatly diminishes our chances of restoring the mangled parts by ulterior plastic procedures.

When the loss of blood is large, and no facilities are convenient to arrest it in any other manner, the rubber band is a valuable resource; but except in such an unusual emergency its employment should be deprecated, and only regarded as an extreme and last resource.

When we recall that in severe fractures multiple muscular lesion is always the most serious complication, we can comprehend why fresh dangers may follow upon the traumatism of the vessels.

Under all circumstances, when possible, by the aid of cocaine analgesia, or without it, we should seek out and securely close, by torsion, or the ligature, any spurting vessels. Frequently tamponing or packing the wound will suffice. We should be absolutely assured that hemostasis has been made complete and permanent, before we close in the parts and bury them deeply under dressings.

It is well now to completely cleanse the parts with sterilized or warm water, to which may be added plain salt, or any of the antiseptics, in small quantities. Hot water or strong chemical solutions are destructive to the tissues, on none acting with more lethal energy than the nude, shattered, osseous structures.

Violent rubbing or scrubbing of the integument is a pernicious refinement of the laws of common cleanliness and only adds renewed trauma to parts greatly reduced vitally.

The rules governing us in the reduction of closed fractures hold good here, in the open, when we are preparing our patient for transport. Great force should not be employed. It is quite enough that we fix or so support the fragments that they will not become displaced in transit. The joints above and below the fracture should be immobilized. We will do well to cover the parts deeply with absorbent gauze and bandage firmly over the joints, but never so tightly as to embarrass the circulation. The limb beyond the site of fracture is in a state of torpor or temporary asphyxia, and

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may now be easily destroyed by strangling the blood current.

In the second group of serious open fractures calling for transport from the place of injury, the question of conveyance becomes a very serious one, for rest and bodily quiet become indispensable, and rough handling, sudden changes of posture, jolting of the body in transport over any distance more than a mile, or delay in placing the patient in some shelter or abode for rest may deprive him of his only hope for recovery. Moreover in some instances when professional succor has arrived, the patient may be in the moribund state, beyond all hope of recovery. Perchance he is exsanguinated, in that condition of collapse sometimes seen in obstetrical hemorrhage, when life is only saved by quiet of body and mind.

A limb has been mangled, the patient is blanched, cold and limp. One almost trembles, as he examines the crushed parts, lest this may add more shock and cut off life. Here we must quickly arrest any escape of blood. At all hazards this must be our first step. If it entails much suffering, the patient should be given enough ether to obtund the senses; for the infliction of pain always augments collapse; moreover, ether given to the stage of exhilaration—say after the administration of one or two ounces—imparts a stimulus to the whole system. But it must be stopped short of full coma.

Hemorrhage controlled and the limb adjusted, the shorter the distance of transport the better; the quicker we can place our man on his couch the better. If near his own domicile, or any other friendly shelter, there he should be brought, rather than take the chances of a transfer to a distant hospital.

When he has reacted well and the prospects of recovery are encouraging, the transfer to hospital is attended with no danger.

Intra-Venous Saline Injections.—With this class of cases of great depression of the vital powers or exsanguination, it might seem a serious omission not to give the patient the benefit of an intra-venous saline injection, as this has of late been highly extolled as a resource of infinite value in case of large blood loss from any cause. My experience, however, has not confirmed this view. That it will quickly revive bodily heat and restore the pulse no one can deny who has employed it. The simplicity of its technique, too,

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is in its favor; but in an emergency case, knowing the embarrassment of the respiration which sometimes follows these injections, one should hesitate in employing them until the patient is placed in permanent quarters.

Most of their advantages may be derived from hot drinks, or enemata. In a case of this description, a patient in full possession of his senses should be consulted about the matter of transport, and caution should be observed that his wishes are respected. It is not a matter of economy to a corporation that a patient must be rushed to a far-off station or hospital. The case is one calling for the highest effort and endeavour, where conscience and professional obligation should be our guide, and not expediency.—Thomas H. Manley, M.D., in *Medical Brief*.

TUBERCULOSIS OF THE MIDDLE EAR AND TEMPORAL BONE.

The Council of the Otological Society has done wisely in devoting a meeting to a discussion on tuberculous disease of the middle ear and its annexa. The opening papers and the discussion which followed will be found fully reported in the March and current numbers of this journal, and to these we would refer our readers.

The seriousness of the disease is obvious to all. Dr. Milligan reports a mortality of 40 per cent. among the cases observed by him. The frequency of the affection is, according to the writers of these papers, greater than is generally supposed. Dr. Wyatt Wingrave has found tubercle bacilli in the discharges in 17 out of 100 selected cases of middle-ear suppuration, and "pseudo-tubercle bacilli" in 7. In 4 out of these 7 there was a family history of tuberculosis. The clinical diagnosis is often evident enough, and Drs. Jobson Horne and Milligan indicated the main features in the average case—namely, the occurrence of a discharge without pain, the extensive destruction of bone, a high degree of deafness, the presence of multiple perforations, or of a loss of substance in the membrane of such a shape as would be produced by the confluence of several perforations, the detention of tubercle bacilli, the early facial paralysis, and infection of the neighbouring lymphatic glands. In a few cases, however, an absolute proof of the *ante-mortem* diagnosis is most difficult to obtain, and a verdict has to be arrived at on more or less circumstantial evidence.

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Dr. Jobson Horne narrates a case to show that although the results of bacteriological examination and animal inoculation of material obtained *post-mortem* from the middle ear and its annexa may be entirely negative, the tubercle bacilli may, nevertheless, be found in the peripheral soft parts superficial to the area of necrosis. This is an argument both against excluding tubercle from our diagnosis when these tests are negative, and also against omitting to make the fullest use of them. Dr. Wingrave's description of the methods of collecting material and staining for bacilli as practiced by him in these investigations will be read with interest. He enumerates the various "acid-fast" bacilli which may be mistaken for those of tubercle, and points out the possibility of being misled by the presence of broken-up, cornified, epithelial "squames."

Dr. Horne offers an ingenious explanation of the characteristic absence of pain—namely, an anæsthetic effect produced by the products of the dissolution of the organisms. To the waxy, and not to the fatty, material he considers the tubercle bacillus owes its peculiar "acid-fast" properties. Professor Pritchard explains the absence of pain by the absence of pressure on the nerves, owing, we presume, to the rapid breaking down of the tympanic membrane and consequent relief of possible tension.

Dr. Dundas Grant pointed out that many cases of suppuration without pain were not tuberculous, but were to be explained, as he believed, by the former existence of forgotten otitis, which had left a perforation or a thin cicatrix, of the existence of which the patient was unware.

The writers of these papers remind us that a suppuration of the middle ear in a phthisical person is not necessarily tuberculous.

Many other points of interest emerged in the course of the communications and in the subsequent discussion. We may note Dr. Milligan's insistence on the examination of the naso-pharynx and the removal of hyperplastic adenoid tissue for bacteriological examination as well as for remedial purposes.

The danger of injudicious operation in unsuitable subjects from the points of view both of shock and of risks of general infection was dwelt upon by Dr. Horne and Dr. Milligan. Mr. Ballance urged the consideration of the matter from the general surgical aspect, and recalled cases in which pulmonary phthisis had been mitigated by amputa-

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tion through the femur on account of tuberculous disease of the knee joint. He did not, therefore, consider the presence of tuberculosis of the lung as contra-indicating radical operation for tuberculous disease of the temporal bone. No doubt he would be unwilling to push this doctrine to its extreme in all cases, and he spoke favourably of operating by stages, as was recommended under certain circumstances by Dr Millgan and Dr. Horne. Mr. Ballance further narrated instructive cases in which the recurrence of tuberculous disease in the glands of the neck and axilla was only checked by radical operation for the removal of the tuberculous focus in the temporal bone.

Dr. Grant recalled Professor Politzer's generalization with regard to operation in chronic suppuration of the middle ear in relation to pulmonary phthisis, to the effect that when phthisis developed in the course of chronic suppuration of the middle ear the radical mastoid operation should be performed, whereas, on the other hand, when the middle-ear suppuration developed in a person who was the subject of advanced phthisis, the operation was contraindicated. The question, which is of surpassing importance, is, consequently, open to discussion.

Mr. Hugh Jones brought before the Society Mr. Nathan Raw's observation that tuberculosis of bone in mankind might be in many cases bovine rather than human. This would open up exceptional possibilities with regard to the primary tuberculosis which all were agreed was found with comparative frequency in the temporal bones of infants and young children. Their feeding with cow's milk might thus have a more than accidental relation to their liability to this affection. Mr. Whitehead's statistics of 100 fatal cases of middle-ear disease gave 12 as tuberculous. Of these the large majority, nine in number, were under two years of age, general miliary tuberculosis being the ultimate cause of death in six and meningitis of tubercular nature in two.

We must draw attention to the interesting clinical and pathological paper on tuberculosis of the middle ear, chiefly primary, by our American *confrère*, Dr. Goldstein. His records illustrate the tendency for the disease to invade the labyrinth, a point insisted on by the observers we have above quoted.

We are confident these valuable communications will appeal to our readers, and that they will read with interest the continuation of the discussion at the last meeting of the Otological Society. D. G.—*The Journal of Laryngology.*

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BRIGHT'S DISEASE, CHRONIC, RENAL DECAPSULATION IN.

By persevering effort the author has enabled to see or get word from all the patients operated on by him, so that he could present the *status* up to date. The first renal decapsulation ever performed for the relief of chronic Bright's disease was done by him on June 10, 1892, and the patient was permanently cured. This case, together with reports of the five preliminary operations which led up to this procedure, was published in the *Medical News* of April 2, 1898. Subsequent papers giving reports of other cases of his own and the *résumé* of the work of other surgeons in this field were published in the *Medical Record* of May 4 and December 21, 1901, and of April 26, 1902. From 1892 to 1901, inclusive, the writer personally operated on 19 cases, and during the year 1902 on 32 cases. Of this total of 51 cases, 29 were in males and 22 in females, and the average age was 34 years. In 32 cases the Bright's disease was far advanced. In 41 of the cases the period which had elapsed between the first recognition of the disease and the operation varied from 1 month to 19 years. The general average of this period was 3 years and 4 months, and in 32 cases it was fully 4 years. Nearly all the cases were attended by cardiac or other complications. Of the 51 cases, 29 were of chronic interstitial nephritis, and in all but 9 only one kidney was operated on; 14 were of diffuse nephritis and 8 of parenchymatous nephritis. If only one kidney was affected by Bright's disease, he said, the patient suffered very little and the condition might be discovered only accidentally.

The chances of success for the operation are enhanced by the patient remaining in bed for a week previous to it. This gives the heart a rest, if cardiac complications are present, and affords the best facilities for any preliminary treatment that may be required, as well as for systematic investigation of the quantity and condition of the urine. There are three conditions the presence or absence of which affect the facility with which the operation may be performed: 1. Great length and obliquity of the twelfth rib. This difficulty must be overcome by posture and a modification of the incision. 2. Mobility or firm appearance of the kidney. When there is firm fixation it is generally necessary to incise the capsule at any point that can be reached. For separating the capsule the rubber-covered index finger

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is the best instrument. 3. The firm or more or less weak attachment of the capsule. Great caution and gentleness should characterize all attempts at decapsulation. In this operation there is often considerable danger of destroying some of the already diminished working tissue of the kidney, and it should never be performed except by surgeons who are already more or less familiar with renal surgery in general. The danger is greater from the condition present than from the operation itself. The procedure, however, should not be too prolonged, so that one hour should be the limit for the decapsulation of two kidneys. The writer has often found half an hour sufficient for operating on both organs. A "team operation" has been proposed, with two surgeons each working on a kidney, but this would hardly be feasible, as two operators, each with his necessary assistants, would inevitably interfere with the prompt accomplishment of each other's work. Another expedient suggested is that only one kidney should be decapsulated at a time; but this, too, is to be depreciated, as the time that the patient would be under an anæsthetic for two separate operations would necessarily be longer than for operating upon both kidneys during one period of anæsthesia.—George M. Edebohls, *Medical News*, March 7, 1903.

Therapeutic Notes.

VERTIGO.

℞. Potassii bromidi... .. .. ʒiv.
Syr. aurantii corticis..... ʒiv.
Aq. q. s. ad..... .... ℥iij.

M. Sig.: Teaspoonful three times a day.

Indications: Used in aural vertigo, and also in vertigo from insomnia and overwork.

℞. Spir. glonoini..... ʒj.

Sig.: One drop in water three times a day, to be gradually increased until temporal headache.

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Indication: Used in aural vertigo.

℞. Sodii bromidi..... ℥ij.
Antipyrini..... ..... ℥j.

M. et ft. tabellæ compressæ No. xij.
Sig.: One tablet three times a day.
Indication: Used in aural vertigo.—*New England Medical Journal.*

Impacted Cerumen amd Rectal Ulcer.

Dr. M. G. Price, of Mosheim, Tenn., recommends in the Medical Summary:—

℞. Glycerine..... ..... ℥ss.
Sodium bicarb..... ..... gr. xx.
Aq..... .... ℥ss.

M. Sig.: Wash out the ears two or three times a day.
For rectal ulcer the same author advises:—

℞. Fl. ext. hydrastis.....
Fl. ext. ergot. of each.. ..... ℥ij.
Fl. ext. hamamelis..... ℥ij.

Mix ½ teaspoonful of this mixture with ½ teaspoonful of cornstarch, to which add 2 tablespoonfuls of warm water. Inject into the bowels and retain all night. Repeat each night.

In Cardiac Debility.

℞. Liq. strychinæ..... ..... *m*v.
Tinct. digitalis..... ..... *m*x.
Tinct. ferri perchlor..... ..... *m*x.
Aquæ vel inf. quassiæ..... ℥j.

M. To be taken three times a day.—J. M. Fothergill, *Southern Practitioner.*

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Editorial.

A few months ago our distinguished Canadian, Dr William Osler, of Johns Hopkins Hospital, Baltimore, delivered a lecture before the Medical Society, St. Louis, on William Beaumont, the pioneer physiologist, on gastric digestion. It is well that the labours of this man should be reviewed before the medical profession, for we believe that there are few living to day who know with any knowledge of detail the experiments made by this man, and which contributed so much to our knowledge. To us Canadians it cannot but be an interesting fact that these experiments were made on the person of a French Canadian, Alexis St. Martin, who, unfortunately for himself, but fortunately for medical science, was wounded in the stomach, and the wound remaining patent. Somewhere in the early fifties St. Martin was in Montreal, and there are a few still living who saw and examined him. We have considered Dr. Osler's lecture so interesting and worthy of the widest circulation, that we publish it in full in this number of the RECORD.

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SIR JAMES A. GRANT, OF OTTAWA.

According to the *Canadian Practitioner*, this gentleman celebrated his Medical Jubilee by entertaining his friends to a dinner and smoking concert on the 4th of February last, Sir Frederick Borden proposing his health. Dr. Grant is one of our most distinguished medical men; but, why he celebrated his Jubilee in 1893, when he graduated from McGill in 1854, is somewhat surprising to us.

"THE LAW AND THE DOCTOR."

Amid the multiplicity of his daily duties, the physician has but scant time to cultivate more than a passing acquaintance with the collateral branches of his profession; the average practitioner, therefore, knows but little of the legal aspect of his relations to the body politic, of his rights and privileges, or his liabilities and responsibilities to his patients and the community at large. While pursuing "the even tenor" of his professional way, the doctor may suddenly be confronted with a summons and complaint in an action for malpractice, or may be called as an expert witness in a similar suit against a colleague. While it is not our intention to urge the physician to become his own lawyer, we believe that he should acquaint himself with the fundamental principles of medical jurisprudence, so that he may be reasonably well prepared to defend his own or his brother physician's rights and privileges on the witness stand. With a view of placing such information at the immediate disposal of the doctor, the Arlington Chemical Co. has arranged to issue, under the title "The Law and the Doctor," two 48 paged booklets, which shall present, in condensed form and succinct style, an epitome of the essentially important features of (1) "The Civil Liability of the Physician for Malpractice" and (2) "The Physician as a Witness." These exceedingly practical monographs have been expressly prepared by an eminent member of the New York Bar, who is well recognized by the legal profession as an expert in this special branch of practice. The first of these reference text

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manuals is now ready for distribution and after a reasonable interval will be followed by the second monograph. Copies may be had by applying to the above Company, at Yonkers, N.Y.

Book Review.

Progressive Medicine. Fifth Annual Series. Volume II. June, 1903. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D. Professor of Therapeuties and Materia Medica in the Jefferson Medical College, of Philadelphia. Octavo, handsomely bound in cloth, 427 pages, with 46 illustrations. Per volume, $2.50, by express prepaid. Per annum, in four cloth-bound volumes, $10.00. Lea Brothers & Co., Publishers, Philadelphia and New York.

A glance through this volume will suffice to show the reader the fatuity of attempting to keep up with the progress of scientific medicine unless he can avail himself of such a work. The enormous amount of material which it contains is the more astonishing when it is realized that it represents only what is of real, recognized scientific and practical value in current medical literature, and not simply a mass of abstracts of articles which have appeared in magazines. Each of the contributions possesses features which render it especially valuable to every practical man.

The volume is copiously illustrated throughout, and the excellent arrangement of its material, together with a full index, render it most convenient for reference.

F. W. C.

LITERARY NOTES.

The Living Age for June 6 is especially rich in timely articles. Under the title "A Passionate Pilgrim," appears a sketch of that u happy Julie de Lespinasse, who suggested to Mrs. Ward the heroine of "Lady Rose's Daughter." One of his former pupils gives reminiscences of "Dean Farrar as Headmaster," and a brillant writer who signs himself "A Retired Politician" comments on "The Decay of Authority," political, social and critical.

The recognized value of Blackwood's literary criticism gives especial weight to the article called "A Century of French Fiction," which *The Living Age* of June 6 reproduces.

Augustine Birrell's comment, in "The Nineteenth Century and After," on the latest Carlyle letters will seem to many readers the mellowest and at the same time the soundest criticism that has been called forth since these ill-judged disclosures of domestic trivialities first began to be made. The article is reprinted in *The Living Age* for June 13.

Charles Hanbury Williams, whose travel sketches from the Dominion have been so vivacious, now sums up the result of his observations in an article in more serious vein: "The American Invasion of Northwestern Canada." It will be found in *The Living Age* for June 20.

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